

1997 Discover Awards: Introduction

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In the history of technology, inventors have not always been treated kindly. For every Bill Gates or Steven Jobs who makes a lucrative transition from scientist to entrepreneur, there are thousands of great inventors who miss out on fame and fortune altogether. Take Pearl Wait, the Le Roy, New York, cough syrup maker who invented Jell-O in 1897. Selling it door-to-door, he couldn't give the fruit-flavored gelatin away, so he relinquished the rights to a neighbor for \$450. Nine years later Jell-O sales reached nearly \$1 million; today, if all the Jell-O boxes made in a 20-month period were put end to end, they'd stretch around the world. Then there's Edwin Armstrong, the engineer who invented fm radio in 1933. At first, radio companies rejected Armstrong's innovation. Later, when fm's superior reception proved apparent, they appropriated the technology without paying him. Armstrong sued, but after five years of litigation he ran out of money and killed himself. (His estate ultimately collected more than \$10 million.)

At Discover we hardly have the power to enrich inventors, but we do have the power to help rescue their names from obscurity. Eight years ago we started the annual Discover Awards for Technological Innovation to recognize and applaud scientists and engineers who are the unsung heroes of our technological age. This year we invited more than 4,000 corporate, academic, and government research centers to nominate innovative technologies and identify the men and women behind them. Our editors whittled down the nominees to 33 finalists in seven categories: Automotive and Transportation, Aviation and Aerospace, Computer Hardware and Electronics, Computer Software, Environment, Sight, and Sound. The finalists were turned over to experts who selected seven winners.

An eighth award, the Editors' Choice Award for Emerging Technology, was given by Discover's editors to a technology so novel that its applications are far from clear. This year we gave two such awards, both in the field of nanotechnology.

The Enabler: Stanford University's Total Access System – one of five finalists in Computer Hardware & Electronics category of 1997 Discover Awards.

INNOVATOR: Neil Scott

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It's easy to see how computers can be so helpful to the disabled: among other things, they can synthesize speech, open doors, and answer phones. Unfortunately, not everyone has the dexterity required to use a mouse or keyboard. And devices designed to get around these problems--those that track the movement of the eyeball or head, or understand speech-- usually must be customized to the individual and to the particular computer,

which makes them expensive. I knew there had to be a better way, says Neil Scott. I felt these sorts of aids should become a part of everyday life.

Scott, an engineer at Stanford's Center for the Study of Language and Information, and his colleagues have developed what they call a total access system, which acts as a universal interpreter between the computer and the person using it. It consists of one tool that attaches to an input device, such as a head tracker or speech recognizer, and converts the device's electronic signals into the interface's own standard signal. Another tool attaches to the computer and converts the standard signal into those the computer can understand.

Scott thinks the dual interface can eventually be made inexpensively and small enough so a user could carry it in his or her pocket and be able to approach any computer and start using it right away-- in most cases with greater efficiency than with a mouse or keyboard. And disabled people might not be the only beneficiaries--Scott believes the dual interface could be especially useful for preventing repetitive strain injury. I get furious when I see people whose lives have been devastated by rsi and who have been out of work for years, he says. It doesn't have to happen.